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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,062	01/19/2001	Takeshi Misawa	0905-0255P-SP	6672

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EXAMINER	
MISLEH, JUSTIN P	
ART UNIT	**PAPER NUMBER**
2622	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/26/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	09/764,062	MISAWA, TAKESHI	
	Examiner	Art Unit	
	Justin P. Misleh	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 3, 5, 8, and 10 - 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 3, 5, 8, and 10 - 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed December 20, 2006 have been fully considered but they are not persuasive.

2. Applicant continues to argue, "one skilled in the art would appreciate that these improvements are over prior art honeycomb-type image pick-up devices as shown in Figs. 1A - 1C of Sekine, not all image pick-up devices. Nowhere in Sekine is there any disclosure or suggestion that the Sekine's honeycomb-type image pick-up device would improve vertical resolution over the semiconductor image pickup device of Komiya."

3. The Examiner again respectfully disagrees with Applicant's position. As previously stated (Advisory Action, mailed May 10, 2006), Sekine admits the prior art matrix-type image sensors of figure 1A and 2 have larger vertical resolutions than the prior art honeycomb-type image sensor of figure 1C. However, Sekine indicates that the problem with all of the solid-state image sensors in the prior art (figures 1A, 1C, and 2) including those with larger vertical resolutions is poor horizontal resolution. Sekine addresses this problem not by necessarily making the vertical resolution larger than all prior art image sensors; instead, Sekine improves vertical resolution by improving the "horizontal and vertical packing densities". In other words, Sekine reduces the pixel pitch in both the horizontal and vertical directions (see figure 4). The Examiner indicated the improvement Sekine adds is "improving vertical resolutions". All image sensors would benefit from the "improving vertical resolutions" indicated by Sekine.

4. Applicant further argues, "neither Komiya nor Sekine disclose or suggest a second controller that records data that represents characteristics based on a structure of on-chip lenses or inner lenses of the honeycomb-type solid-state electronic image sensor as claimed."

5. The Examiner respectfully disagrees with Applicant's position. Komiya et al. disclose writing lens characteristic data in a header portion of image data in the memory card (23). In other words, lens characteristic data and corresponding image data are corresponding recorded in the recording medium. Furthermore, Komiya et al. teach that the lens characteristics may comprise "lens position" and "focal length", which are later used for image processing including correction of lens aberrations (see column 6, lines 13 - 23). The "focal length" of a lens is determined by the index of refraction, the radii of curvature of the lens' surfaces, and the medium in which the lens resides; hence, the "focal length" corresponds to the "structure of lenses".

6. At the time of the Non-Final Office Action (mailed September 20, 2006), the Examiner recognized these features of Komiya and additionally introduced to Suzuki teach "a plurality of correction patterns to correct the aperture value are stored in the EEPROM 13, and the correction patterns are previously made in consideration of manufacturing variations of micro-lenses corresponding to imaging elements respectively" (see column 4, line 67 - column 5, line 4). Additionally, Suzuki et al. note, "each of correction patterns is provided per each of micro-lenses that have different characteristics respectively, and each of the correction patterns includes information that shows how much the aperture value obtained by the exposure calculation should be corrected" (see column 5, lines 4 - 9). Finally, Suzuki et al. teach, "the correction pattern that was selected in the selecting operation of correction pattern is read out from the EEPROM 13, the aperture value is corrected based on the correction pattern" (see column 5, lines 31 - 34).

7. In regards to Claim 1, Applicant has not directly addressed the teachings of Suzuki. Accordingly, the Examiner maintains Suzuki et al. provide wherein the characteristics represented are based on a structure of on-chip or inner lenses of the image sensor. For these reasons, the Examiner maintains Claim 1 is unpatentable over the combination of Komiya et al. in view of Sekine in further view of Suzuki et al.

8. However, Applicant further argues, with respect to Claim 3, "Suzuki appears to teach storing characteristics based on a structure of on-chip lenses of an image sensor ... Suzuki appears to teach storing the correction patterns on EEPROM 13 and applying them via signal processing to the image data prior to storing the image data on the recording medium 9 (see Figs. 4 and 6). The correction patterns of Suzuki are **not** stored on the recording medium in association with the recording medium" (emphasis in original).

9. The Examiner respectfully disagrees with Applicant's position. In the Non-Final Office Action, the Examiner relied upon Komiya to teach "Komiya et al. disclose, as shown in figures 3A and 3B and as stated in column 5 (line 15) - 6 (line 24), an image sensing unit (CCD 17), a first recording controller (card writer 22) for recording image data which is output from the image sensing unit on a recording medium (memory card 23), and a second recording controller (also card writer 23) for **recording data which represents characteristics based on the structure of lenses of the image sensing unit (Specifically, see column 5, lines 54 - 67, and column 6, lines 43 - 48), on the recording medium (memory card 23) in association with the image data**" (emphasis added). Hence, Komiya discloses storing the characteristics in the same recording medium as the image data.

10. Further, in the Non-Final Office Action, the Examiner indicated, "[at] the time the invention was made, **it would have been obvious to one with ordinary skill in the art to have included wherein the characteristics represented are based on a structure of on-chip or inner lenses of the image sensor (as taught by Suzuki et al.) in the image sensing apparatus with honeycomb-type sensor and recording controller (taught by Komiya et al. in view of Sekine et al.)** for the advantage of providing an imaging device that can accurately compensate dropping of the sensitivity of an imaging element that is caused from a change of an aperture value or an exit pupil position (see Suzuki et al.; column 2, lines 9 - 12)" (emphasis added).

11. For these reasons, the Examiner maintains Claim 3 is also unpatentable over the combination of Komiya et al. in view of Sekine in further view of Suzuki et al.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. **Claims 1 – 3, 5, 8, and 10 – 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Komiya et al. in view of Sekine in further view of Suzuki et al.

14. For **Claims 1 and 3**, Komiya et al. disclose, as shown in figures 3A and 3B and as stated in column 5 (line 15) – 6 (line 24), an image sensing unit (CCD 17), a first recording controller (card writer 22) for recording image data which is output from the image sensing unit on a recording medium (memory card 23), and a second recording controller (also card writer 23) for

recording data which represents characteristics based on the structure of lenses of the image sensing unit (Specifically, see column 5, lines 54 – 67, and column 6, lines 43 – 48) such that the image data is corrected using the characteristic data when the image data is reproduced (see figure 2 and column 5, lines 25 – 40), on the recording medium (memory card 23) in association with the image data.

Komiya et al. disclose writing lens characteristic data in a header portion of image data in the memory card (23). In other words, lens characteristic data and corresponding image data are corresponding recorded in the recording medium. Furthermore, Komiya et al. teach that the lens characteristics may comprise "lens position" and "focal length", which are later used for image processing including correction of lens aberrations (see column 6, lines 13 – 23). The "focal length" of a lens is determined by the index of refraction, the radii of curvature of the lens' surfaces, and the medium in which the lens resides; hence, the "focal length" corresponds to the "structure of lenses".

However, Komiya et al. fails to teach:

A) wherein the image sensing unit includes a honeycomb type solid-state electronic image sensor having a number of photoelectric transducers disposed in column and row directions wherein the photoelectric transducers for odd-numbered columns are placed in odd or even numbered rows and the photoelectric transducers for even-numbered columns are placed in even or odd numbered rows AND

B) wherein the characteristics represented are based on a structure of on-chip or inner lenses of the image sensor.

In regards to A), Sekine also discloses an image sensor. More specifically, Sekine teaches that the image sensor is honeycomb image sensor (figure 4). Further, Sekine indicate that the honeycomb image sensor (figure 4) is arranged wherein the pixels are disposed in odd numbered column and odd numbers rows, and even numbered columns and even numbered rows (also see column 3, lines 25 – 47 and column 5, lines 6 – 60).

At the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included a honeycomb image sensor (as taught by Sekine) in the image sensing apparatus and corresponding method of operating thereof (disclosed by Komiya et al.) for the advantage of *improving vertical resolutions* (see Sekine; column 2, lines 34 – 37).

In regards to B), Suzuki et al. also disclose an image sensing unit and recording controller. More specifically, Suzuki et al. teach an image sensing unit (6; figure 4) and a recording controller (10; figure 4) for recording data on a medium (EEPROM 13). Furthermore, Suzuki et al. teach, "a plurality of correction patterns to correct the aperture value are stored in the EEPROM 13, and the correction patterns are previously made in consideration of manufacturing variations of micro-lenses corresponding to imaging elements respectively" (see column 4, line 67 – column 5, line 4). Additionally, Suzuki et al. note, "each of correction patterns is provided per each of micro-lenses that have different characteristics respectively, and each of the correction patterns includes information that shows how much the aperture value obtained by the exposure calculation should be corrected" (see column 5, lines 4 – 9). Finally, Suzuki et al. teach, "the correction pattern that was selected in the selecting operation of correction pattern is read out from the EEPROM 13, the aperture value is corrected based on the correction pattern" (see column 5, lines 31 – 34). Therefore, it is clear that Suzuki et al. provide

wherein the characteristics represented are based on a structure of on-chip or inner lenses of the image sensor.

At the time the invention was made, it would have been obvious to one with ordinary skill in the art to have included wherein the characteristics represented are based on a structure of on-chip or inner lenses of the image sensor (as taught by Suzuki et al.) in the image sensing apparatus with honeycomb-type sensor and recording controller (taught by Komiya et al. in view of Sekine et al.) for the advantage of *providing an imaging device that can accurately compensate dropping of the sensitivity of an imaging element that is caused from a change of an aperture value or an exit pupil position* (see Suzuki et al.; column 2, lines 9 – 12).

15. As for **Claim 2**, Komiya et al. disclose, as shown in figure 3A, a storage device (also memory card 23) for storing the data representing the characteristics ("focal length"); wherein said second recording controller records the data representing the characteristics on the storage device (23), said data being read out of said storage device (see column 6, lines 13 – 23).

16. As for **Claims 5 and 8**, Komiya et al. disclose, as stated in column 5 (lines 43 – 67), wherein the second recording controller (card writer 22) further records data representing circuit characteristics based on the use of the image sensing unit (17) on the recording medium (23).

More specifically, Komiya et al. teach setting different JPEG compression rate for each compression mode and further teach, recording in the memory card (23), the compression mode, white balance, and shutter speed during image capture, all of which correspond to circuit characteristics.

17. As for **Claims 10 – 15**, Komiya et al. teach that the lens characteristics may comprise "lens position" and "focal length", which are later used for image processing including

correction of lens aberrations (see column 6, lines 13 – 23). The "focal length" of a lens is determined by the index of refraction, the radii of curvature of the lens' surfaces, and the medium in which the lens resides; hence, the "focal length" corresponds to the "structure of lenses". Komiya teaches storing information concerning the on-chip-lens curvature, index of refraction and position, and inner-lens curvature. Komiya further teaches, in column 6 (lines 43 – 47), storing information concerning distortion aberration.

Therefore, Komiya teaches wherein the structure of lenses is: the on-chip-lens curvature, index of refraction and position, inner-lens curvature, and aberration. Furthermore, the Examiner notes all lenses inherently have distortion and chromatic magnification aberrations.

18. As for **Claims 16 and 18**, Komiya discloses, as shown in figure 2 and as stated in column 5 (lines 25 – 40), wherein the data representing the characteristics is recorded on the recording medium such that signal processing of the image data using said characteristics can be performed at a time of image data playback.

19. As for **Claims 17 and 19**, Komiya discloses, as shown in figure 2 and as stated in column 5 (lines 25 – 40), wherein the data representing the characteristics is recorded on the recording medium such that signal processing of the image data using the characteristics can be performed by loading said characteristics into a device other than the image sensing apparatus.

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

21. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 571.272.7313. The Examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Vivek Srivastava can be reached on 571.272.7304. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
March 19, 2007

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